

## Process Change Notification

This is to inform you that a design and/or process change/s will be implemented to the following product(s) listed below. This notification requires your concurrence within 45 days upon receipt of this notification.

The plan change/s will take effect 90 calendar days from the date of this notification.

Please work with your local Taiwan Semiconductor Sales Representative to manage your inventory of the existing product if your evaluation of this change will require more than 90 calendar days.

For additional data and samples, you can contact your local Taiwan Semiconductor Field Quality Service or Customer Quality Engineer within 45 days upon receipt of this notification

**PCN No: PCN23009 rev0**

**Title:** ITO-220 product UGF8JD Additional Wafer Source

**Issue Date: 2023/08/15**

If you have any questions concerning this change, please contact:

**PCN Coordinator**

Name : Sunnie Lin  
E-Mail: [sunnie.lin@ts.com.tw](mailto:sunnie.lin@ts.com.tw)  
Phone: +886 8913 1588 ext. 2205

**PCN Originator**

Name : Daisy Liang  
E-mail: [daisy@mail.tsyew.com.cn](mailto:daisy@mail.tsyew.com.cn)  
Phone: +86 5438691091 ext. 3108

**Reliability Engineer**

Name : Roben Jiao  
E-mail: [roben@mail.tsyew.com.cn](mailto:roben@mail.tsyew.com.cn)  
Phone: + 86 5438691091 ext. 3110

**PCN Type:** Additional Wafer Source

**Effectivity:**

Expected 1st device shipment date: 2023/11/13

**Product Category (Description) :**

Ultra Fast Rectifier in ITO-220 package.

See detailed part numbers in the List of Affected Devices.

**Description of Change:**

This change notification is being issued to notify customer that in order to assure continuity of supply, Taiwan Semiconductor Company is qualifying its own wafer fabrication located in Li-je for Ultra Fast Rectifier assembled in ITO-220 package.

Full electrical characterization and high reliability testing has been completed on the representative devices to ensure no change to the device functionality or electrical specifications in the datasheet.

**Wafer Structure Comparison:**

Item	Current	Additional	Remarks
Die Source	Silan	Lije	Add second source
Wafer Diameter	5"	6"	Larger wafer diameter
Top Metal Layer	Ti-Ni-Ag	Ti-Al-Ti-Ni-Ag	Different metal layer
Back Metal Layer	Ti-Ni-Ag	Ti-Ni-Ag	Same metal layer
Die Passivation	Polyimide	SiO <sub>2</sub> /TEOS/ Polyimide	Different passivation material
Die size	84mil	84mil	Same die size
Die thickness	280μm	280μm	Same die thickness

Remarks: No major differences that can affect product quality and reliability. No expected impact to the product functionality (form, fit and function).

**Qualification Results:**

Qual Vehicle: UGF8JD

Qualification/Reliability Result (AECQ-101)

Item	Test Condition / Duration	Reference Standard	#lot	Sample Size	Remarks
Pre- and Post-Stress Electrical Test	Electrical characteristic @25°C	Data sheet	3	525*1 515*2	Pass
EV (External Visual)	Inspect part construction and marking, per TSC Spec.	JESD22B-101	3	525*1 515*2	Pass
PV (Parameter Verification)	Electrical characterization @ -55/ 25/ 175°C	Data sheet	3	30*3	Pass

Item	Test Condition / Duration	Reference Standard	#lot	Sample Size	Remarks
HTRB (High Temperature Reverse Bias)	100% Rated VR (Tj=175°C) / 1008hrs	MIL-STD-750 Method 1038	3	80*3	Pass
TC (Temp. Cycling)	150°C(+15,-0)/15mins, -55°C (-10,+0)/15mins, 1016 cycles	JESD22A-104 Appendix 6	3	80*3	Pass
UHAST (Unbiased Highly Accelerated Stress Test)	Ta=130°C, 85% RH/ 96hrs	JESD22-A118	3	80*3	Pass
HAST (Highly Accelerated Stress Test)	Ta=110°C, 85% RH 80% rated VR up to 42Vmax /264H	JESD22-A110	3	80*3	Pass
IOL (Intermittent Operational Life)	On/ 5mins, Off/ 5mins, ΔTj ≥ 100°C, 6048cycles	MIL-STD-750 Method 1037 AEC-Q101 Table 2A	3	80*3	Pass
ESD (IEC)	Contact: (C=150pf R:330 Ω) / 10Pulses	IEC-61000-4-2	3	15*3	Pass
ESD HBM	HBM: (C=100pf R:1500Ω) / 6Pulses	AEC-Q101-001	3	30*3	8KV/H3B
DPA (Destructive Physical Analysis)	TC passed chose 2pcs of the 1 lot HAST or HTRB passed chose 2pcs of the 1 lot	AEC-Q101-004	1	4*1	Pass
RSH (Resist.to Solder Heat)	Ta=260±5°C/ 10secs	JESD22-A111 (SMD)	3	30*3	Pass
TR (Thermal Resistance)	Per. TSC Spec.	JESD24-3, 24-4, 24-6 as appropriate	1	10*1	Pass

**Conclusion:** The product passed the full reliability required in AECQ101 standard.

Identification and Traceability:

Item	Identification
Traceability	Product date code

**Effect of Change:**

There is no impact in product Form, Fit and Function. This change will guarantee Taiwan Semiconductor commitment on customer service and satisfaction through continuous improvement.

**List of Affected Devices:**

Family	Package	Ordering Code
8A, 600V Ultra Fast Rectifier	ITO-220AC	UGF8JD
8A, 600V Ultra Fast Rectifier	ITO-220AC	UGF8JDH